EUROPE'S COASTAL FISHERIES: INSTABILITY AND THE IMPACTS OF FISHERIES POLICY

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Abstract

This paper discusses the precarious situation of Europe's coastal fisheries in an increasingly complex world where environmental, economic, political and social instabilities – either separately or interactively – threaten their future sustainability. It draws particular attention to key lessons from resilience thinking and the role that social sciences can play in developing a deeper understanding of the nature of change and the processes of shaping the vulnerability, resilience and adaptation of fishing communities and livelihoods, as well as the dangers implicit in certain aspects of fisheries policy. The paper concludes by introducing the papers in this special issue of Sociologia Ruralis on *Resilience and Adaptation of Fishing Communities*.

1. Introduction

Across Europe – and in many other parts of the world – fishing has been undergoing a more or less continuous process of contraction and concentration in terms of vessel numbers and employment. Much of the contraction can be attributed to the effects of modernisation, specialisation, economies of scale and technical innovation. It has been accentuated by regulation and the depletion of resources through overfishing, itself in part induced by failures of fisheries governance (Bavinck *et al*., 2013). Contraction does not necessarily imply loss of resilience within the fishing industry. Indeed the survival of 'small scale' fisheries, accounting for around 80% of active fishing vessels and around 90,000 full and part

time jobs within the EU (Macfadyen *et al.*, 2011)[1], and of the many fishing communities around Europe's extensive coastline, is testament to the robustness of the social institutions that have helped them to adapt throughout a period of economic and social upheaval. The dismantling of systems of common use rights, the regulation of fishing activity and the globalisation of trade in fish and fish products have dramatically altered the landscape of fishing over the last couple of generations (Symes, 1997).

In addition, commercial fisheries are placed under increasing stress from environmental conservation and the demands of multiple users of marine space and resources. Together with a growing burden of regulation and, perhaps most significantly, the privatisation and marketisation of fishing rights, the resilience of fishing communities and the stability of fishing livelihoods are being put at ever greater risk. Fishing is a traditional occupation in the sense that it has relied on intergenerational continuity through the succession of sons, and occasionally daughters, not only to work alongside and eventually take over the family enterprise from their fathers but also to guarantee the transfer of local ecological knowledge on which the success of the enterprise depends. For many potential successors today fishing is neither the occupation of necessity or choice and recruitment of local crews is becoming more difficult. Several writers (see for example, Nuttall, 2000 and Williams, 2014) have commented on the 'disappearance' of the fishing community as a consequence of the progressive dilution of fishing related activity to a point where it no longer dominates the local landscape nor constitutes the largest occupational group. For many the term 'fishing community' is more closely associated with a collective memory of the past than with a functional description of the present (Williams, 2009).

[1] Definitions of small scale fisheries are notoriously difficult to pin down, usually rather arbitrary and fail to capture the diverse circumstances across different countries. The figures here cover vessels less than 12 m in length drawing on Macfadyen *et al.* (2011). See also Symes and Phillipson (2001) for a discussion of the definitional challenge of small scale fisheries.

The challenge is how to rebuild resilience and adaptive capacities within the fisheries sector and the fishing community. This paper provides a basic framework for answering the question by first outlining the nature of resilience in relation to coastal fisheries – which we understand broadly as encompassing fishing activities within roughly 100 miles of the coast, usually involving trips of one or two days' absence from port, secondly by indicating the many different strands of social science that are woven into the fabric of resilience, and finally by offering some thoughts as to how fisheries policy – past, present and future – may impact on resilience building.

2. Instability, resilience and coastal fisheries

The future sustainability of coastal fisheries and the communities that nurture them, depends on the co-functioning of four local subsystems (Table 1): a) diverse, productive and well integrated *marine ecosystems*; b) efficient but flexible *economic systems* capable of adding value to and organising the disposal of multiple, irregular and sometimes small volume landings through a combination of informal local markets and regional, national or international distribution networks; c) *social systems*, comprising networks of fisher households, fishing crews and fishing communities that help to underpin the work patterns involved in fishing, ensure the social renewal of fishing related enterprises and diffusion of local ecological knowledge and provide collective support for the fishing industry in times of crisis; and d) interactive *governance systems* with responsibility for regulating activity within their jurisdictions and, ideally, ensuring balanced functioning of the three other subsystems.

[Table 1]

Each of these subsystems is characterised by multiple and inherent sources of change, creating a fisheries system in constant flux needing to continuously adapt to changing circumstances. At any one time, coastal fisheries may be facing several forms of change. These range from transient but pronounced irregularities in the functioning of the environmental and economic subsystems ('pulse changes' such as price fluctuations or weather events) to less frequent but more profound events (stock collapse, market failure, fundamental policy reform) that can cause structural damage as well as functional impairment. Underlying these are more insidious, slow moving trends – such as climate change, globalisation, the emergence of post-productivist society – that place increasing pressure on the environmental, economic or social subsystems. Each type and form of change will, to varying degrees, interact with each other making solutions to the problems created both difficult to identify and implement. Furthermore they are experienced and filtered through the myriad of circumstances of coastal fisheries that are found across localities and nations, in terms of fishing methods, target fisheries, ecological and social impacts, levels of local community dependence on fishing, and policy and institutional settings (Symes, 1999, 1998; Symes and Phillipson, 2001). Coastal fisheries therefore differ very extensively, and this also extends to their adaptive capacities and levels of socio-ecological resilience.

These are the 'wicked problems' that characterise coastal fisheries (Jentoft and Chuenpagdee, 2009) and cannot be dealt with separately through simple technical fixes but only in context and as an ongoing, interactive situation. This increasingly complicated world can best be understood, as in resilience theory (see, for example, Folke et al, 2010), as a dynamic complex of multi-layered, co-evolving subsystems interacting across different spatial scales with each subsystem continually confronted by, and responding to, changes within its internal

structures and external environments. Because of the mutations occurring within each subsystem the impacts from a single source of disturbance are likely to vary quite strongly at the local level. What are sometimes perceived as universal problems usually require the implementation of resilience building strategies designed at the local level.

Collins English Dictionary offers the following definition of the adjective 'resilient':

> "1 (of an object or material) capable of regaining its original shape or position after bending, stretching, compression or other deformation; elastic. 2 (of a person) recovering easily and quickly from shock, illness, hardship, etc; irrepressible."

This common understanding of resilience, referring to the ability of a system to maintain its basic structure and return to either a previous or new state of equilibria following an unexpected (and largely unwelcome) disturbance, has underpinned earlier engineering and ecological notions of the concept (Holling, 1973; Davoudi, 2012). More specifically in relation to fisheries it has been developed and come to be used in reference to the capacity of the local social-ecological systems to learn from, respond and adapt to change by a) *absorbing* the immediate impact of the disturbance; b) *adapting* to the changed situation; and c) where necessary, *reorganising* its internal structures and external relationships in ways that will allow the system to maintain or transform its basic functions, goods and services (Berkes and Folke, 1998; Berkes, 2010a).

Flexibility is the key to resilience and the adaptive process, and to an evolutionary view of socio-ecological resilience (Davoudi, 2012). Thus resilience focuses on the processes of renewal and reorganisation of 'multi-equilibrium, complex, unpredictable social-ecological systems subject to continuous change" (Berkes, 2010a, p. 25; see also Adger, 2000). Citing

Steneck *et al* (2009) Berkes (2010a) refers to 'gilded traps' – examples where systems may yield lucrative but potentially short term economic benefits that carry the risk of reduced resilience due to the loss of flexibility of opportunity. In Europe, the decline of the west of Scotland demersal stocks and the abandonment of coastal herring fisheries has led to concentration on shellfisheries intended for high end export markets. Many districts in north west Scotland today show returns where trawl fished and creel caught *Nephrops* account for over 85% of landings by value. Monocultural fishing systems can be vulnerable to overproduction, falling demand and weakening prices, especially in times of recession. Resilience, on the other hand, requires that the overall system remains as open and flexible as possible so that scope for future adaptations is assured.

In coastal fisheries therefore, resilience should not be confused with continuity. Building resilience will involve maintaining both the diversity of local ecosystems and the integrity of local social systems through approaches that safeguard their flexibility and adaptability. This requires an understanding of the functioning and interdependencies of both systems within an ecosystem based approach, variation of fishing effort in line with natural fluctuations of fish stocks and ecosystem carrying capacity, and effective local systems of interactive governance informed by both scientific advice and local ecological knowledge (Kooiman *et al*., 2005). It follows that resilience building strategies should focus not on securing the survival or sustainability of individual fishing enterprises or even individual fishing communities, but on the overall integrity, flexibility and dynamics of the underlying ecological and social systems.

In looking to develop resilience building strategies a distinction needs to be made between initial emergency actions to mitigate the immediate impact of the disturbance (coping strategy) and the longer term constructive developments designed to strengthen the system

through the realignment of its structures, functions and procedures (adaptive strategy). Although the former may pave the way for the latter there are circumstances in which the initial responses may prove inimical to future resilience building. There may well be a wide range of options available to an individual caught up in the aftermath of change, not all of which will serve the interests of local social-ecological resilience.

Resilience building is an individual and collective responsibility. Just as individual responses based on the aspirations, skills, experience and circumstances of those involved may not always correspond to those of the wider community, so those of the community may be at odds with the perspectives of the local (or national) administration. One of the key requirements for resilience building, therefore, is the mobilisation of collective action (see Agnitsch et al, 2006) not only in developing a coherent community prospectus for a local resilience strategy (bonding capital) but also in creating synergies with other actors engaged in steering future local development (bridging capital).

The response to the disturbance may prove as far reaching and critical as the disturbance itself in terms of secondary effects. Certain stopgap measures may increase the vulnerability to future disturbances: bank loans that increase the overall indebtedness of an enterprise may inhibit the flexibility of response when facing the next challenge. Shifts in livelihood strategies and portfolios may erode the social identities, life modes and relationships of fishers and their households. Policy decisions may also have unintended consequences. Subsidy schemes for vessel decommissioning and scrapping, favoured by some European administrations in the 1990s and early years of the present century as a response to fleet overcapacity and designed to improve the resilience of the fleet overall, have had negative implications at the local level where remaining enterprises face rising service charges and/or

reduced local services because of the reduction in critical mass. As the section on resilience and the impacts of fisheries policy will demonstrate, policy making has become one of the most potent sources of instability. For many in the diverse settings of Europe's coastal fisheries it seems that the 'solutions' implemented through central policy making have become the real problem (Gezelius and Raakjaer Nielsen, 2008; Symes, 2012; Hegland *et al.*, 2012).

3. Social dimensions of resilience

Understanding resilience is quite clearly a case for interdisciplinary investigation, involving the natural, social and political sciences (Phillipson and Symes, 2013). Attention needs to focus not only on the nature of change and its impacts on coastal fisheries, but also on the processes shaping the vulnerability, resilience and adaptation of fishing communities and livelihoods and the ways in which fishing policy and local development initiatives can support adaptive capacities and resilience building strategies.

There is, however, a particular role for the social sciences. Resilience is deeply embedded in the social structures, relationships and behaviours associated with coastal fisheries and their host communities. We need to explore how these structures, relationships and behaviours cope with endemic conditions of uncertainty and are able to withstand, deflect or absorb different types and magnitudes of change, ranging from seasonal variations and unexpected short term fluctuations in weather, landings, quayside prices etc., on the one hand, to major shocks and threshold effects involved in stock collapse, draconian policy measures etc., on the other.

222 The social and economic systems that support coastal fisheries are designed to accommodate
223 broadly predictable seasonal rhythms and short term fluctuations through polyvalent vessel
224 design and fishing gears that allow a strong measure of operational flexibility through the
225 combination of different seasonal fisheries and variations in the level of fishing activity over
226 the year. This essential flexibility also encompasses the basic choice between full time
227 ('professional') engagement in fishing and a part time, seasonal or occasional involvement
228 more suited to pluriactive livelihoods. In the context of small scale fisheries pluriactivity is a
229 common but often ignored and understudied phenomenon. Long term engagement in fishing
230 and flexibility of the households is secured when incomes from other occupations
231 compensate for temporary declines in fishing revenues and vice versa. Moreover, the palette
232 of income sources combined in a household is under constant change. New forms of
233 pluriactivity, e.g. when fishing is combined with wage work and services for the recreational
234 sector, may provide a notable basis for adaptation of commercial fishing (Salmi, 2005).
235
236 Responding to the cumulative effects of long term decline in fishing opportunities or to the
237 threshold effects of more abrupt, destabilising changes calls for more deliberate actions and
238 strategies. The adaptive responses of fishing business households may over time involve
239 withdrawal from fisheries all together. For others resilience involves a continuous process of
240 adapting to a changing environment. Pettersen (1996) identified four basic household
241 strategies – expansion, diversification, retrenchment and withdrawal – from a sample of
242 family based fishing enterprises in Lofoten, northern Norway, consequent on the sharp
243 downturn in fishing opportunities in the Norwegian cod fisheries in the second half of the
244 1980s. The first two strategies were directed at maintaining overall levels of household
245 income during the crisis years and were most commonly adopted in households with
246 relatively high external financial commitments. In the case of an expansion strategy there was

an increased level of commitment to fishing related activities, involving the extension of the household's (and especially the wife's) work commitments to the family fishing enterprise usually at the expense of the other crew members. In the case of diversification the aim was to compensate for the loss of income from the fishing by increasing the wife's paid work outside the fishing enterprise. Both expansion and diversification imply positive adaptations of the household resources in response to the crisis and served to maintain the fishing enterprise. By contrast, retrenchment and withdrawal – mainly affecting older, smaller households – relied on the willingness to adapt to reduced levels of income and household expenditure and potentially a greater reliance on welfare payments. What Pettersen's study revealed most clearly is that the choice of strategy depends largely on the scope for adaptation afforded by the structure and resources of the 'family firm' (household), the crucial role of women's work, levels of short and longer term commitment to fishing and the availability of alternative employment in the immediate neighbourhood.

Attitudes towards the diversification strategy also reveal differences between Europe’s fishing communities: while in the Lofoten islands diversification was seen as a positive adaptation strategy in response to crisis (Pettersen, 1996) in some, though by no means not all, Scottish fishing communities, many people strongly resist moving away from fishing (Ross, this volume) in fear that this will reduce their autonomy, independence and ability to exercise the basic skills learnt while being a fisherman.

Survival under crisis conditions is therefore often a test of resilience. But what is it that underpins the resilience of individuals, households and communities in the face of endemic conditions of risk and uncertainty and what can be done to strengthen resilience in times of crisis? The answer to the first part of the question is to be found in the analysis of social

institutions and how they respond not only to critical events but also to broader contextual changes that affect 'living the fishing'. The answer to the second part may emerge from a critical review of recent fisheries policy and proposals for reform.

Much of the work of social scientists in Europe and North America over the last 40 years or so, and especially during the last decade, has contributed to our understanding of how coastal fisheries – and to a lesser extent the industrial offshore fisheries – function and how the key social structures (crews, fisher households and fishing communities) have adapted to endogenous and exogenous change. Drilling deeper into the literature reveals the distinctive life modes associated with coastal fishing (Andresen and Højrup, 2005; van Ginkel, 2001); the construction of social identities of skippers, fishing crews and fisher households (Williams, 2009); the values and aspirations of those involved (van Ginkel, 2001); the changing roles of women in fisher households (Nadel-Klein and Davis, 1988); and the local political structures (Alegret, 1999; Phillipson, 2002).

The picture that emerges is one of an occupation that values its independence, self-reliance and teamwork in the pursuit of one of the most physically demanding and dangerous jobs and is supported by close-knit, functional networks based primarily on kinship (household) and neighbourhood that work towards the attainment of common goals and the collective identity of the fishing community. The resilience of the overall social system that underpins coastal fishing is, however, subject to increasing stress as a consequence of demographic change (ageing, reduced household size and migration) and the re-evaluation of fishing as an occupation of choice, and perhaps most importantly the impacts of fisheries policy.

4. Resilience and the impacts of fisheries policy

Can policy measures help to build or rebuild resilience in the fishing industry and fishing community? While in theory the answer ought to be 'yes', in practice the comparatively short history of modern fisheries management reveals very little supporting evidence. Indeed, though it is often assumed that wider society has an articulated interest in maintaining fishing communities, augmenting their resilience may be low on the list of priorities of policy makers alongside other goals relating to environmental conservation and organisation of the market (Symes and Phillipson, 2009; Urquhart *et al*., 2014).

What is clear, however, is the ability of fisheries policy to erode resilience. The second half of the 20th century saw Europe's fishing industries caught up in a struggle between two contrasting approaches to resilience building in which neo-liberal policies supporting specialisation and economies of scale triumphed over the more traditional diversification approach to countering the endemic conditions of risk and uncertainty. Over the past 40 years, fisheries management in Europe has been synonymous with regulation primarily designed to rebuild depleted fish stocks and ensure an equitable distribution of diminishing fishing opportunities among coastal states and their fishing industries. Through a combination of restrictive licensing, individual vessel quotas, days at sea allocations and catch composition rules now deployed in the management of mixed demersal fisheries in areas like the North Sea, the effect has been to remove or at least significantly reduce the very flexibility of fishing operations that enables individual enterprises to adapt to changing conditions. Decisions on what, where, when and how to fish are now very tightly circumscribed. The sheer volume and complexity of regulation makes short term and longer term business planning more difficult. Opportunities for diversification within fishing may be

minimal and the transferability of the assets and skills associated with fishing to other activities is by no means straightforward.

As a result, the social identity of the skipper-owner, based on independence, self-reliance and a willingness to take calculated risks in the deployment of local ecological knowledge, skills and experience in bringing home a successful catch, is seriously compromised (Williams, 2009). Decommissioning schemes, intended to remove surplus capacity in the fishing fleet, inevitably mean a narrowing of the arteries through which renewal of social capital is maintained. Systems of quota management involving transferable fishing rights are likely to have a similar effect in reducing the size of the fleet and removing 'less efficient' operators, creating a situation where an essential means of production – quota entitlements – ends up in the hands of a small number of fishing enterprises or non-fishing institutions (banks, credit agencies) and individuals ('slipper skippers') (Eythorsson, 1996).

Not all segments of coastal fishing are equally impacted by regulation. Management of the important shellfisheries is largely achieved through more sensitive technical conservation measures (specifying the design and use of gears, minimum landing sizes, closed areas and seasons etc.) rather than the much blunter instruments of output restrictions, though there are increasing pressures to extend the norms of finfish management to include key shellfish species (Symes, 2014). More importantly, management decisions for these and other inshore fisheries are often taken locally through stakeholder led, co-management bodies with greater understanding of local ecological conditions and the conduct of the fisheries (Sen and Raakjaer Nielsen, 1996; Phillipson, 2002). Significantly, Berkes' (2010a) advocacy of a resilience based approach to management was postulated on the integration of social and ecological systems that local co-management embodies.

According to Berkes (2010a: 25) resilience thinking provides "a likely source of insights for developing a more holistic and complete account of human relationships with the sea and a natural candidate for the theoretical basis in redefining 'natural resources' and 'management'". Resilience thinking accepts that social-ecological systems are complex and unpredictable but claims they are capable of living with uncertainty and adapting to change. The approach is offered as an antidote to the sterile effects of modern fisheries management, especially for small scale fisheries in the developing world (Berkes, 2010b). There is no theoretical reason why the approach cannot be applied to coastal fisheries in Europe, though there are several political and practical reasons why this might prove very challenging in the European context relating to the persistently centralised and top-down characteristics of the Common Fisheries Policy. Thus according to Symes (2012: pp. 6-7):

> "By the beginning of the twenty-first century, the CFP had become the archetype of centralised, top down management driven by reductionist science and limited in scope to a narrow range of technical solutions. As such it was increasingly out of step with current thinking on fisheries governance. … [The] ecosystem approach has remained a latent rather than active influence on fisheries policy, partly because of the absence of an appropriate regional framework in which to operate. … More fundamentally, the reformulation of issues concerning fisheries and coastal management as 'wicked problems' …, the elaboration of the theory and practice of interactive governance … and development of resilience theory as a basis for reconstructing the stewardship of natural resources …, all called into question the survival of centralised management systems like the CFP".

The last thirty years of fisheries management have seen little progress in addressing the social issues associated with contraction of fishing activity and its effects on the wider fishing community. Yet the rhetoric surrounding fisheries policy still makes great play of the importance of the small scale sector and the viability of fishing communities (Commission, 2011). In practice, dealing with the social consequences of policy decisions has previously been left largely to other agencies (social welfare, regional development) and member states through the derogation that allows them to retain responsibility for managing their inshore waters (0-12 nm). Financial assistance to the industry has been directed principally towards improvements in the physical infrastructure (harbours, quayside markets and processing facilities) and modernisation of the fishing fleet – aiding and abetting the expansion of fishing capacity at a time when the thrust of fisheries management was towards reducing fishing effort.

With the establishment of the European Fisheries Fund (2007-13) and its Annex 4 provisions, a radically different, more nuanced and relevant approach to the future of coastal communities affected by changes in the fisheries sector that would assist their transition to more sustainable growth was set in motion. Annex 4 seeks to achieve this transition through the development of local strategies devised and implemented by Fisheries Local Action Groups (FLAGs) that place an emphasis on entrepreneurship, value adding activities and creating linkages between fisheries and other sectors of the local economy with greater synergies between individual projects (see van der Walle, Phillipson and Symes, this volume). Uptake has been strong with over 300 FLAGs now established across the EU. Providing it can successfully negotiate the somewhat complex bureaucratic arrangements at EU, national and local levels the new approach should add to the resilience of the fisheries sector and fishing community. In particular it should help to remedy one of the main

weaknesses of the fisheries sector, namely its isolation from the local and regional business communities that has bred insularity and introspection and created misunderstanding and mistrust among the public at large.

5. Outlining the argument

The selection of papers in this special issue is intended to provide insights into the nature of changes currently facing Europe's coastal fisheries and examples of both individual and collective efforts to (re)build the resilience of the sector. Salmi's paper sets the scene for what is happening to coastal fisheries throughout much of Europe as a result of the ascendency of wildlife conservation and recreational interests in the management of coastal waters. Using the example of the Archipelago Sea in south west Finland, he posits that the emergence of new ideologies, changing rural-urban relations and a realignment of institutional arrangements imply a narrowing of the scope for traditional small scale fisheries. These same tendencies can, however, open up opportunities for new synergies between commercial fishing, recreation and environmental conservation though this is challenging the nature of fishing identities and it will require more open collaboration between the different interest groups and across the levels of governance for these to be fully realised.

Coulthard and Britton explore a different set of challenges arising from policy responses to the crisis in EU fisheries management that has seen a halving of fisheries related employment in Northern Ireland's coastal economy. Their paper focuses on the options facing fishing households, exploring their adaptive strategies and the impacts of these on wellbeing, concluding that governance systems need to respect the opportunities for those affected by disruptive change to broker their own strategies.

White, on the other hand, addresses the problems affecting recruitment and retention of young people in the inshore crab and lobster fisheries off the Norfolk coast in eastern England that threatens the social renewal of the industry and thereby undermines its resilience. Her analysis of the push and pull factors affecting the choice of fishing as an occupation, the transition from deckhand to skipper-owner and the contrasting opportunities for those from fishing and non-fishing backgrounds leads into a discussion of where responsibility for fixing the problem lies.

The ways in which fishing communities are perceived from within by their constituents is the subject of Ross' study of 'communities of the mind' based on research insights from some of Scotland's principal fishing areas. Examining themes of empathy, freedom, autonomy and attitudes towards 'outsiders', she uncovers reserves of 'bonding' social capital that can play a key role in resilience building. However significant constraints are also apparent due to the absence of 'bridging' capital, as evidenced by negative perceptions towards the attitudes and actions of outsiders leading to standoffs between communities and policy makers.

Doeksen and Symes' paper engages directly with resilience building actions adopted by individual firms in the Dutch oyster growing industry to counter threats from environmental change. Two distinctive approaches are identified: a conservative risk minimising strategy focusing on good mariculture practice and cost reducing actions within the firm and household and a more ambitious, expansionist approach of vertical and/or horizontal integration of the firm's economic functions. There is, however, a perceived reluctance to engage in collective initiatives to strengthen the industry's resilience.

The last two papers provide complementary perspectives on one of the EU's more encouraging developments in its attempt to deal with the economic and social impacts of the Common Fisheries Policy (CFP), namely the Axis 4 provisions of the European Fisheries Fund. Phillipson and Symes suggest that FLAGs offer a compromise solution to the tensions that exist between the narrowly sectoral approach of the CFP and the broader territorial approach to managing disadvantaged coastal regions by providing an appropriate institutional framework for resilience building at the local scale and enabling both individual and collective initiatives to prosper within a locally agreed development strategy. Van der Walle's contribution takes the argument a step further through a closer look at how projects chosen to implement the FLAG strategy can create synergies for achieving the goal of integrating fishing with other sectors of the local economy. The evidence is drawn from the Pays d'Auray area of western France where tourism and housing development have increased the pressure on marine ecosystem services, threatening the disruption of inshore fisheries and the mariculture sector.

6. Conclusions

Europe's coastal fisheries are under increasing stress from both internal and external pressures for change, not least of which are those emanating from the prevailing approaches to fisheries management. There are, nonetheless, sufficient grounds for believing that their future sustainability can be guaranteed. Resilience thinking forms part of that guarantee providing not only a new paradigm for analysing many of the problems confronting coastal fisheries but also a potentially valuable prospectus for their solution.

The present collection of papers offers some indication of the growing instability and

uncertainty affecting Europe's coastal fisheries and fishing communities and the tensions that exist between and within the current sectoral and territorial approaches to management. It also gives an insight into recent moves to find a middle way that can contribute more effectively to resilience building.

Although several authors stress the need for changes to fisheries policy that would give greater weight to social issues and outcomes and so facilitate a more nuanced approach to the sustainability of Europe's coastal fisheries, none are tempted to elaborate the content of such a policy. The reasons for this apparent oversight are quite straightforward. What emerges very clearly from any in-depth analysis of coastal fisheries is the huge diversity of circumstances that renders universal solutions of little practical value.

This diversity represents a particular challenge to those seeking to rationalise and simplify the tasks of management; it is also part of the matrix of resilience on which the sustainability of coastal fisheries depends. What follows, therefore, is the importance of devolving much of the responsibility for managing coastal fisheries to the local and regional level where the nature of the interactions between the ecological and social subsystems are more readily apparent, the issues arising more sharply defined and the opportunities for interactive governance and resilience building more readily realised.

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Environmental (ecosystem productivity) • climate change • extreme weather events • disruption of ecosystem functions • disease • pollution	**Economic** (resource exploitation) • rise of industrial capitalism • globalisation of trade • technological innovation • input costs • market instability
Social (social organisation) • demographic transition • education, social mobility, social values • rise of post-productionist society	**Political** (governance) • increasing state intervention • property rights • regulation • governance systems

Table 1. Sources of instability and change